

that was transmitted through the wireless network. The logistic function has the form: $y = 1 + 4/(1 + \exp(-1.7244 * x + 5.0187))$ where x is the score from the PESQ algorithm which is in the range of -0.5 to 4.5 and y is the mapped
5 MOS score which is in the range of 1 to 5 wherein if $y=5$ then the quality of the speech signal is considered excellent and if $y=1$ then the quality of the speech signal is considered bad.

10 BRIEF DESCRIPTION OF THE DRAWINGS

A more complete understanding of the present invention may be obtained by reference to the following detailed description when taken in conjunction with the accompanying drawings wherein:

15 FIGURE 1 is a block diagram of a measurement device that incorporates the PESQ algorithm and logistic function of the present invention which are used to estimate the voice quality of a speech signal transmitted in a wireless network;

20 FIGURE 2 is a flowchart illustrating the steps of a preferred method for estimating the voice quality of a speech signal transmitted in wireless networks in accordance with the present invention;

25 FIGURES 3A-3C are block diagrams of exemplary products that can be made which use one or more PESQ algorithms and logistic functions of the present invention to estimate the voice quality of one or more wireless networks;

FIGURE 4 is a graph of a scatter diagram used to generate the logistic function of the present invention that illustrates subjective MOS values vs. PESQ raw scores;

FIGURE 5 is a graph related to the mapping of the
5 logistic function of the present invention that illustrates logistic mapped MOS values vs. PESQ raw scores; and

FIGURE 6 is a graph related to the residual error distribution associated with the logistic function of the present invention that illustrates residual error CDF % vs.
10 MOS bin.

DETAILED DESCRIPTION OF THE DRAWINGS

Referring to FIGURES 1 and 2, there are shown preferred embodiments of a measurement device 100 that
15 incorporates the PESQ algorithm and logistic function 110 of the present invention and a method 200 for implementing the PESQ algorithm and logistic function 110 of the present invention which is used to estimate the quality of a speech signal 115 transmitted in a wireless network 120. It
20 should be appreciated that certain details associated with the components within the measurement device 100 and the wireless network 120 are well known in the industry. Therefore, for clarity, the description provided below in relation to the measurement device 100 and the wireless
25 network 120 omits those well known details and components that are not necessary to understand the present invention.

The measurement device 100 includes a receiving unit 125 (e.g., mobile phone 125, wireless voice transceiving